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EXAMINER

ELLIS, RYAN H

ART UNIT	PAPER NUMBER
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3745

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,160	Applicant(s) BUTZ ET AL.	
	Examiner RYAN H. ELLIS	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-19 and 21-29 is/are rejected.
- 7) ☒ Claim(s) 20, 30 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/10/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the leaf spring central abutment touching the inner shroud and the lateral abutments touching the seal bearing must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 13 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 13 claims that the spring element has a low radial height which is an unbased comparison and is therefore indefinite.

6. Claim 20 is indefinite because it claims that the spring extends minimally in a radial direction which is an unbased comparison making it indefinite as to how much the spring extends in said direction.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 12-15, 21-23 and 27-29, as far as they are definite, are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 7,291,946 to Clouse et al.

(Clouse).

Clouse teaches:

In Reference to Claim 12

A damping arrangement for guide vanes, in particular for guide vanes (151) of a gas turbine or an aircraft engine, wherein radially external ends of the guide vanes of a guide vane grid or a guide vane ring are mounted to a housing (platform 153), wherein radially internal ends of the guide vanes form an inner shroud (platform 155), wherein at least one seal bearing (seal 157) is mounted to the inner shroud of the guide vanes, and wherein at least one spring element (damper 161) is installed between the inner shroud of the guide vanes and the, or each, seal bearing, and wherein the, or each, spring element is configured as a leaf spring (Figure 6).

In Reference to Claim 13

The damping arrangement according to Claim 12 (see rejection of claim 12 above), wherein the, or each, spring element configured as a leaf spring (damper 161) is installed in a hollow space (cavity 159) having a low radial height

(Figure 6) and defined between the inner shroud of the guide vanes and the, or each, seal bearing.

In Reference to Claim 14

The damping arrangement according to Claim 12 (see rejection of claim 12 above), wherein the, or each, spring element configured as a leaf spring (161) is clamped between the inner shroud (155) of the guide vanes and the, or each, seal bearing (157).

In Reference to Claim 15

The damping arrangement according to Claim 14 (see rejection of claim 14 above), wherein the, or each, spring element (161) configured as a leaf spring is clamped between the inner shroud (155) of the guide vanes and the, or each, seal bearing (157) such that a central abutment section of the leaf spring abuts against the, or each, seal bearing, and a first and a second lateral abutment section of the leaf spring abut against the inner shroud of the guide vanes (Figure 6).

In Reference to Claim 21

The damping arrangement according to Claim 12 (see rejection of claim 12 above), wherein the, or each, spring element (161) configured as a leaf spring extends minimally in a radial direction.

In Reference to Claim 22

The damping arrangement according to Claim 12 (see rejection of claim 12 above), wherein the, or each, spring element configured as a leaf spring (161)

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comprises a plurality of leaf spring sections separated from each other by slits (slots 175), wherein each inner shroud of each guide vane is associated, respectively, with a one of the leaf spring sections.

In Reference to Claim 23

A damping arrangement for a guide vane (151) of a gas turbine engine, comprising: a guide vane, wherein a radially internal end of the guide vane forms an inner shroud (155); a seal bearing (157) mounted to the inner shroud of the guide vane; and a spring element (161) disposed between the inner shroud and the seal bearing, wherein the spring element is a leaf spring (Figure 6).

In Reference to Claim 27

A damping arrangement for a guide vane ring of a gas turbine engine, comprising: a guide vane (151) ring including a first and a second guide vane, wherein a radially internal end of each of the first and second guide vanes forms an inner shroud (155); a seal bearing (157) mounted to the inner shrouds of the first and second guide vanes; and a spring element (161) disposed between the inner shrouds and the seal bearing, wherein the spring element is a leaf spring (Figure 6).

In Reference to Claim 28

The damping arrangement according to Claim 27 (see rejection of claim 27 above), wherein the leaf spring includes a first section and a second section (Figure 7), wherein the first section and the second section define a slit (slot 175) between the first and second sections.

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In Reference to Claim 29

The damping arrangement according to Claim 28 (see rejection of claim 28 above), wherein the first section of the leaf spring (161) is disposed between the inner shroud (155) of the first guide vane and the seal bearing (157) and wherein the second section of the leaf spring is disposed between the inner shroud of the second guide vane and the seal bearing (Figure 6). Both sections are between the two.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,291,946 to Clouse et al. (Clouse) and in further view of an engineering expedient.

In Reference to Claim 16

Clouse teaches all of the following except:

Wherein the, or each, spring element configured as a leaf spring is clamped between the inner shroud of the guide vanes and the, or each, seal bearing such that a central abutment section of the leaf spring abuts against the inner shroud of the guide vanes, and a first and a second lateral abutment section of the leaf spring abut against the, or each, seal bearing.

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An engineer in the turbine art would have considered flipping the spring as a routine engineering expedient so that the middle abuts the inner shroud because the forces are the same in either orientation and it is obvious to but the spring in either orientation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the orientation of the spring of Clouse so that the middle abuts the inner shroud as an engineering expedient because the forces are the same and it is obvious to place the spring in either orientation.

11. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,291,946 to Clouse et al. (Clouse) and in further view of US Patent No. 5,601,407 to Humhauser.

In Reference to Claim 17

Clouse teaches:

The damping arrangement according to Claim 12 (see rejection of claim 12 above), wherein between the inner shroud (155) of the guide vanes and the, or each, seal bearing (157).

Clouse fails to teach:

At least one securing element is installed in addition to the, or each, spring element.

Humhauser teaches:

At least one securing element (wire 5) is installed in addition to the, or each, spring element. It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the vane and seal of

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Clouse with the securing element as taught by Humhauser because the configuration was known in the art and could have been implemented by one of ordinary skill with predictable results.

In Reference to Claim 18

Clouse as modified by Humhauser teaches:

The damping arrangement according to Claim 17 (see rejection of claim 17 above), wherein the, or each, securing element (5) extends in a circumferential direction laterally next to the, or each, spring element that is configured as a leaf spring (Figure 5).

In Reference to Claim 19

Clouse as modified by Humhauser teaches:

The damping arrangement according to Claim 18 (see rejection of claim 18 above), wherein the, or each, securing element is configured as a securing wire (5).

12. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,291,946 to Clouse et al. (Clouse) and in further view of US Patent No. 6,139,264 to Schilling.

In Reference to Claim 24

Clouse teaches:

The damping arrangement according to Claim 23 (see rejection of claim 23 above).

Clouse fails to teach:

Wherein the leaf spring is a flat metal sheet and wherein the flat metal sheet engages with the inner shroud and the seal bearing to deform the leaf spring.

Schilling teaches:

Wherein the leaf spring (32) is a flat metal sheet and wherein the flat metal sheet engages with the inner shroud and the seal bearing to deform the leaf spring (Figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the spring of Clouse as a flat metal sheet as taught by Schilling for the purpose of decreasing the looseness in the assembly (col. 3, ll. 37-47).

In Reference to Claim 25

Clouse as modified by Schilling teaches:

The damping arrangement according to Claim 24 (see rejection of claim 14 above), wherein the, or each, spring element (161) configured as a leaf spring is clamped between the inner shroud (155) of the guide vanes and the, or each, seal bearing (157) such that a central abutment section of the leaf spring abuts against the, or each, seal bearing, and a first and a second lateral abutment section of the leaf spring abut against the inner shroud of the guide vanes (Figure 6).

13. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 7,291,946 to Clouse et al. (Clouse), US Patent No. 6,139,264 to Schilling and in further view of an engineering expedient.

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In Reference to Claim 26

Clouse as modified by Schilling teaches all of the following except:

Wherein a central abutment section of the deformed leaf spring engages with the inner shroud and extends in a radially inner direction and wherein a first and a second lateral abutment section of the deformed leaf spring engage with the seal bearing and extend in a radially outer direction.

An engineer in the turbine art would have considered flipping the spring as a routine engineering expedient so that the middle abuts the inner shroud because the forces are the same in either orientation and it is obvious to but the spring in either orientation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the orientation of the spring of Clouse so that the middle abuts the inner shroud as an engineering expedient because the forces are the same and it is obvious to place the spring in either orientation.

Allowable Subject Matter

14. Claims 20, 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No. 4,285,633 to Jones teaches a damper between a shroud and seal. US Patent No. 4,897,021 to Chaplin et al. teaches a seal with slots between a shroud and vane.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN H. ELLIS whose telephone number is (571)270-7414. The examiner can normally be reached on Monday-Friday; 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ED LOOK can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RYAN H. ELLIS/
Examiner, Art Unit 3745

/Edward K. Look/
Supervisory Patent Examiner, Art Unit 3745